ADDENDUM NO. 1

February 19 2016

Re: Sanford High School and Technical Center
12-067-00

To: Bidders and All Others to Whom Bidding Documents have been issued.

All items in this Addendum shall supersede or clarify the Bidding Documents as originally issued. The cost of the Work of all trades affected by the changes in this Addendum shall be included in the Base Bid or Alternates, on the Proposal Form, as applicable. Failure to do so may subject the Bidder to disqualification. This Addendum forms a part of the Contract Documents. It supplements and/or modifies them as follows:

Item No. 1.1 **Reference: Drawing R1.00, Detail E1:** The poly sheet noted as "32 21 13 RADON MITIGATION 6MIL POLYETHYLENE SHEET" shall extend only 25 feet from the exterior perimeter wall (not continuous under the entire slab).

Item No. 1.2 **Reference: Drawing R1.00, Detail E1:** The vapor retarder noted as "07 25 00 VAPOR RETARDER 6MIL" should read "O7 21 00 UNDERSLAB VAPOR RETARDER".

Item No. 1.3 **Reference: Drawing R1.00, Detail B1:** The vapor retarder noted as "07 25 00 VAPOR RETARDER" should read "O7 21 00 UNDERSLAB VAPOR RETARDER".

Item No. 1.4 **Reference: Specification 01 00 30:** Question: Is it possible to obtain a CAD file of the Site? Answer: CAD files may be obtained by reviewing, Filling out, and Signing the Electronic Media Agreement found in Section 01 00 30 ELECTRONIC MEDIA, and forwarding this to Lance.Whitehead@LBPA.com.

Item No. 1.5 **Reference: Specification 23 01 00, 1.06:** Section C should be struck. Section 01 31 33 Building Information Modeling does not pertain to this project and was not issued. Coordination Drawings are required per Specification Section 01 30 00 ADMINISTRATIVE REQUIREMENTS.

Item No. 1.6 **Reference: Specification 26 72 30:** Question: Is there an existing Access Control System in the School District that contractors are required to expand as part of this project? Answer: No.

Item No. 1.7 **Reference: Specification 26 72 30:** Question: Your spec, while not naming a manufacturer is very manufacturer feature specific and limiting. Can alternative systems be proposed that do not meet the full specification? Answer: Proposed Substitutions should refer to Specification Section 01 60 00. Proposed substitutions should fill out the CONTRACTORS SUBSTITUTION REQUEST form, as well as provide a side-by-side comparison of the proposed product versus the specified product including all specified properties and features to clearly articulate differences. Substitutions will be reviewed and approved or declined as part of addenda.

Item No. 1.8 **Reference: Specification 26 71 70:** Question: Exaqvision is listed as a manufacturer for Closed Circuit Television Systems. Can alternative systems be proposed? Answer: Proposed Substitutions should refer to Specification Section 01 60 00. Proposed substitutions should fill out the CONTRACTORS SUBSTITUTION REQUEST form, as well as provide a side-by-side comparison of the proposed product versus the specified product including all specified properties and features to clearly articulate differences. Substitutions will be reviewed and approved or declined as part of addenda.

Item No. 1.9 **Reference: Specification 26 76 00:** Question: Can alternative systems be proposed? Answer: Proposed Substitutions should refer to Specification Section 01 60 00. Proposed substitutions should fill out the CONTRACTORS SUBSTITUTION REQUEST form, as well as provide a side-by-side comparison of the proposed product versus the specified product including all specified properties and features to clearly articulate differences. Substitutions will be reviewed and approved or declined as part of addenda.

Item No. 1.10 **Reference: Specification 26 76 00, 1.03:** Section C should be struck. This project is not seeking LEED accreditation.

Item No. 1.11 **Reference: Specification 08 71 00, 1.04:** Section G should strike all references to LEED requirements. This project is not seeking LEED accreditation.

Item No. 1.12 **Reference: Specification 08 35 13.23, 2.02:** Section C, the term "with limited temperature rise" should be struck. As the building has a sprinkler system, TR doors are not required.

Item No. 1.13 **Reference: Specification 07 21 00, 2.07:** Husky Yellow Guard 15mil Manufactured by Poly-America L.P. shall be an acceptable substitution for Underslab Vapor Retarder. Clarification: Moistop and Stego Wrap shall be 15mil minimum.

Item No. 1.14 **Reference: Specification 08 80 00, 2.04:** Section E, SuperLite II-XL as manufactured by SaftiFirst shall be acceptable for Fire-Protection-Rated Glazing.

Item No. 1.15 **Reference: Specification 01 23 00, 1.04:** Section N, Alternate #14, Replace the phrase "(Concrete Brick at Front Elevations)" with "(Metal Panel at Gym)". Alternate #14 should have been named Metal Panel at Gym. Clarification: The value listed for Alternate #14 shall assume that Alternate#3 has been accepted.

Item No. 1.16 **Reference: Section 2-B1 and 2-B2:** See attached Revised Bid Forms.

Item No. 1.17 **Reference: Table of Contents, Division 26, and Specification 26 56 68:** See attached Specification SECTION 26 56 68 – EXTERIOR ATHLETIC LIGHTING. This should have been included in the specification and in the Table of Contents. This shall be part of Filed Sub-Bid Package E.

Item No. 1.18 **Reference: Civil Drawings:** Question: Can Fabric Formed Concrete be substituted for Rip Rap / Processed Angular Rock on this project? Answer: No.

Item No. 1.19 **Reference: Specification 22 13 00, 2.02:** Question: Can the Brentwood Storm Tank System be substituted for the designed storm water systems on this project? Answer: No.

END OF ADDENDA #1

SECTION 2-B-1

PROPOSAL FORM FOR GENERAL CONTRACTORS
(PUBLIC SCHOOL PROJECTS)

BIDDER:_____

_____

_____

TO: **Sanford School Department**
917 Main Street Suite 200
Sanford, Maine 04073

A. Having carefully examined the form of contract, general conditions, special provisions and plans and specifications dated **11 February 2016** Prepared by: **Lavallee Brensinger Architects**
For **Sanford High School and Technical Center, Sanford, Maine 04073 Project: 12-067-00, Dated: 11 February 2016, Issuance: Bid Documents**
as well as the premises and conditions affecting the work, we the undersigned propose to furnish all labor, equipment, and materials necessary for and reasonably incidental to the construction and completion of this proposal for the amount of:

_____Dollars

$_____

The above amount includes the allowances listed in Specification Section 01 21 00 – Allowances.

B. Alternate bids are included on this project. Refer to Section 01 23 00 – Alternates. Any dollar amount line below that is left blank by the Bidder shall be taken as a bid of $0.00. Alternate Bid prices are as follows:

Alternate No.	Title of Alternate	Dollar Amount
1	*Roof Protection Board*	
	ADD / DEDUCT (Circle One)	$ _____
2	*Concrete Brick at Rear Elevations*	
	ADD / DEDUCT (Circle One)	$ _____
3	*Concrete Brick at Front Elevations*	
	ADD / DEDUCT (Circle One)	$ _____
4	*Resilient Floor Tile and Ceramic Floor Tile*	
	ADD / DEDUCT (Circle One)	$ _____
5	*Porcelain Tile at Main Spine Area*	
	ADD / DEDUCT (Circle One)	$ _____

6 *Field Storage Building*

ADD / DEDUCT $ _____
(Circle One)

7 *Additional Fencing at Track*

ADD / DEDUCT $ _____
(Circle One)

8 *Organic Infill at Turf*

ADD / DEDUCT $ _____
(Circle One)

9 *Turf Custom Logo*

ADD / DEDUCT $ _____
(Circle One)

10 *Emergency Access Road Paving*

ADD / DEDUCT $ _____
(Circle One)

11 *Vinyl Fencing*

ADD / DEDUCT $ _____
(Circle One)

12 *Building Automation System / Controls Manufacturer*

ADD / DEDUCT $ _____
(Circle One)

13 *Stadium and Press Box Emergency Inverter*

ADD / DEDUCT $ _____
(Circle One)

14 *Metal Panel at Gym*

ADD / DEDUCT $ _____
(Circle One)

15 *Site Signs*

ADD / DEDUCT $ _____
(Circle One)

16 *Site Underdrain Reduction*

ADD / DEDUCT $ _____
(Circle One)

C. The Bidder acknowledges receipt of the following addenda to the specifications and drawings:

Addendum No._____, Dated_____Addendum No._____, Dated_____

Addendum No._____, Dated_____Addendum No._____, Dated_____

Addendum No._____, Dated_____Addendum No._____, Dated_____

D. Filed subcontract proposals as follows: (List those trades required, but do not combine trades except as called for)

Trade	Name of Subcontractor	Amount
Sub-Bid Package A	_____	$_____
Sub-Bid Package B	_____	$_____

Sub-Bid Package C _____ $_____

Sub-Bid Package D _____ $_____

Sub-Bid Package E _____ $_____

Sub-Bid Package F _____ $_____

The undersigned agrees that each of the above named subcontractors represents a bona fide SUBPROPOSAL based on the plans and specifications and will be used for the work indicated at the amount stated, unless a substitution is made by mutual agreement as provided for in section 1, paragraph 6, "Instructions to Bidders". In the event alternate prices are requested and various trades are involved, the general contractor may use properly filed subproposals even though a change in subcontractors from those carried in his base proposal may occur. If he does use different subcontractors because of alternates, he shall use supplemental sheets attached to the proposal form (2-B1) to indicate such changes.

E. The undersigned agrees, if this proposal is accepted, to sign a contract and deliver it, along with the bonds and affidavits of all insurance specified within twelve (12) calendar days after the date of notification of such acceptance, except if the 12th day falls on a holiday, a Saturday or Sunday, then the conditions will be fulfilled if the required documents are received before 12 o'clock noon on the day following the holiday, or the Monday following the Saturday or Sunday, and as a guarantee thereof, herewith submits a certified or cashier's check or bid bond as required.

The undersigned agrees, if awarded the contract, to complete the work on or before **August 1, 2018**.

This proposal includes the cost of a 100% performance bond and a 100% payment bond.

Signed _____

By _____

Address _____

_____

NOTE: If bidder is a corporation, write State of incorporation, and if a partnership, give full names of all partners.

END OF SECTION

2-B2
MAINE CONSTRUCTION BID DEPOSITORY
(PUBLIC SCHOOL PROJECTS)
PROPOSAL FORM FOR SUBCONTRACTORS
LONG FORM

To:_____

_____
For green envelope copy, list any general contractor(s) excluded from your bid.

PROJECT: **Sanford High School and Technical Center, Sanford, Maine 04073, Project: 12-067-00, Dated: 11 February 2016, Issuance: Bid Documents**
SECTION(S) QUOTED:_____
PRICE QUOTED: SECTION_____$_____SECTION_____$_____
TOTAL COMBINED PRICE (if applicable) SECTIONS_____$_____

A. The undersigned propose to furnish all labor and materials required for completing in accordance with the hereinafter described plans, specifications general conditions and addenda, all the work specified in the above stated section(s) of the specifications and contract drawings dated **11 February 2016**.
Prepared by **Lavallee Brensinger Architects**.

B. Alternate bids are included on this project. Refer to Section 01 23 00 – Alternates. Any dollar amount line below that is left blank by the Bidder shall be taken as a bid of $0.00. Alternate Bid prices are as follows: (Use separate sheets as necessary)

Alternate No.	Title of Alternate	Dollar Amount
1	*Roof Protection Board* ADD / DEDUCT (Circle One)	$ _____
2	*Concrete Brick at Rear Elevations* ADD / DEDUCT (Circle One)	$ _____
3	*Concrete Brick at Front Elevations* ADD / DEDUCT (Circle One)	$ _____
4	*Resilient Floor Tile and Ceramic Floor Tile* ADD / DEDUCT (Circle One)	$ _____
5	*Porcelain Tile at Main Spine Area* ADD / DEDUCT (Circle One)	$ _____
6	*Field Storage Building* ADD / DEDUCT (Circle One)	$ _____
7	*Additional Fencing at Track* ADD / DEDUCT (Circle One)	$ _____

8 *Organic Infill at Turf*

ADD / DEDUCT $ _____
(Circle One)

9 *Turf Custom Logo*

ADD / DEDUCT $ _____
(Circle One)

10 *Emergency Access Road Paving*

ADD / DEDUCT $ _____
(Circle One)

11 *Vinyl Fencing*

ADD / DEDUCT $ _____
(Circle One)

12 *Building Automation System / Controls Manufacturer*

ADD / DEDUCT $ _____
(Circle One)

13 *Stadium and Press Box Emergency Inverter*

ADD / DEDUCT $ _____
(Circle One)

14 *Metal Panel at Gym*

ADD / DEDUCT $ _____
(Circle One)

15 *Site Signs*

ADD / DEDUCT $ _____
(Circle One)

16 *Site Underdrain Reduction*

ADD / DEDUCT $ _____
(Circle One)

C. The subcontract proposal includes the following addenda to the drawings and specifications: (List addenda and issue date of each).

Addendum No._____, Dated_____Addendum No._____, Dated_____

Addendum No._____, Dated_____Addendum No._____, Dated_____

Addendum No._____, Dated_____Addendum No._____, Dated_____

D. The undersigned agrees that, if he is selected as a subcontractor, he will execute with the selected general contractor a subcontract in accordance with the terms of this subproposal, and furnish the general contract with a 100% performance bond and a 100% payment bond <u>for his portion of the work.</u>

E. _____License # (if applicable)_____
(Firm Name of Sub-bidder)
Signed by:_____Date_____
Address_____
Street City State Zip

F. All foreign corporations intending to do business in Maine must comply with the provisions of 13A M.R.S.A., Chapter 12 and shall contact the Secretary of State for compliance.

END OF SECTION

SECTION 26 56 68

EXTERIOR ATHLETIC LIGHTING

PART 1 – GENERAL

1.01 SUMMARY

A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

B. The sports lighting will be for the following fields:

1. Football/ Soccer
2. Track/Walking Track

C. The primary goals of this sports lighting project are:

1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. The light levels shall be guaranteed for a period of 25 years.
2. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated, and the field(s) should be proactively monitored to detect luminaire outages over a 25 year life-cycle. To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system.
3. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Field(s) should be proactively monitored to detect luminaire outages over a 25 year life-cycle.

1.02 LIGHTING PERFORMANCE

A. Performance Requirements: Playing surfaces shall be lit to an average constant light level and uniformity as specified in the chart below. Light levels shall be held constant for 25 years. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Average illumination level shall be measured in accordance with the IESNA LM-5-04. Light levels shall be guaranteed from the first 100 hours of operation for the maximum warranty period.

Area of Lighting	**Average Constant Light Levels**	**Maximum to Minimum Uniformity Ratio**	**Grid Points**	**Grid Spacing**
Football	50 footcandles	2.0:1.0	72	30’ x 30’
Soccer	50 footcandles	2.0:1.0	84	30’ x 30’
Track	32 footcandles	9.8:1.0	42	30’ x 30’
Walking Track	5.9 footcandles	4.2:1.0	42	30’ x 30’

1. Lumen maintenance control strategy: A constant light system shall use automatic power adjustments to achieve a lumen maintenance control strategy as described in the IESNA Lighting Handbook 10th Edition, Lighting Controls Section, page 16-8: "Lumen maintenance involves adjusting lamp output over time to maintain constant light output as lamps age, and dirt accumulation reduces luminaire output. With lumen maintenance control, either lamps are dimmed when new, or the lamp's current is increased as the system ages."

2. Independent Test Report: Manufacturers bidding any form of a constant light system must provide an independent test report certifying the system meets the lumen maintenance control strategy above and verifying the field performance of the system for the duration of the useful life of the lamp based on lamp replacement hours. Report shall be signed by a licensed professional engineer with outdoor lighting experience. If report is not provided at least 10 days prior to bid opening, the manufacturer shall provide the initial and maintained designs called for in this specification under Alternate Manufacturers, section 1.8.
3. Project References: Manufacturers bidding any form of a constant light system must provide a minimum of five (5) project references within the state of Massachusetts that have been completed within the last calendar year utilizing this exact technology. Manufacturer will include project name, project city, and if requested, contact name and contact phone number for each reference.

B. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, the pole mounting heights from the playing field surface shall be 80' mounting height.

1.03 ENVIRONMENTAL LIGHT CONTROL

A. Spill Light Control: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers and external shields. No symmetrical beam patterns are accepted.

1.04 LIFE-CYCLE COSTS

A. Energy Consumption: The average kW consumption for the field lighting system shall be 105 or less.

B. Complete Lamp Replacement: Manufacturer shall include all group lamp replacements required to provide 25 years of operation based upon 200 usage hours per year.

C. Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual lamp outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

D. Remote Monitoring System: System shall monitor lighting performance, including on/off status, hours of usage and lamp outages. If luminaire outages that affect playability are detected, manufacturer shall contact owner so that maintenance can be proactively scheduled. The controller shall determine switch position (Manual or Auto) and contactor status (open or closed).

E. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields, to only having permission to execute "early off" commands by phone.

Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

F. Management Tools: Manufacturer shall provide a web-based database of actual field usage and provide reports by facility and user group.

G. Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

1. Cumulative hours: shall be tracked to show the total hours used by the facility
2. Current lamp hours: shall be tracked separately to reflect the amount of hours on the current set of lamps being used, so relamping can be scheduled accurately

H. Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring systems for a period of 25 years.

I. 25-Year Life-cycle Cost: Manufacturer shall submit 25-year life-cycle cost calculations as follows. Equipment price and total life-cycle cost shall be entered separately on bid form.

a.	**Luminaire energy consumption** # luminaires x __kW demand per luminaire x 0.13 kWh rate x 200 annual usage hours x 25 years		
b.	**Demand charges, if applicable**	+	
c.	**Cost for spot relamping and maintenance over 25 years** Assume 7.5 repairs at $ 500 each if not included with the bid	+	
d.	**Cost to relamp all luminaires during 25 years** 200 annual usage hours x 25 years / 2,100 hours x $125 lamp & labor x # luminaires if not included with the bid	+	
	TOTAL 25-Year Life-cycle Operating Cost	=	

1.05 WARRANTY AND GUARANTEE

25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years OR for the maximum hours of coverage based on the estimated annual usage, whichever occurs first. Warranty shall guarantee light levels; lamp replacements; system energy consumption; monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations. Group lamp replacements for constant light systems must occur in accordance with the independent test report provided by the manufacturer; alternate systems must relamp every 2,100 hours.

1.06 DELIVERY TIMING

Equipment On-Site: The equipment must be on-site 4 – 6 weeks from receipt of approved submittals and receipt of complete order information.

1.07 PRE-BID SUBMITTAL REQUIREMENTS

A. Approved Product: Musco's Green Generation Lighting® sports lighting system is the approved product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section at least 10 days prior to bid. Special manufacturing to meet the standards of this specification may be required. An addendum will be issued prior to bid listing any other approved lighting manufacturers and designs.

B. Design Approval: The owner / engineer will review pre-bid shop drawings from the manufacturers to ensure compliance to the specification. If the design meets the design requirements of the specifications, a letter will be issued to the manufacturer indicating approval for the specific design submitted.

1.08 ALTERNATE SYSTEM REQUIREMENTS

A. Compliance to Specifications: Acceptance of a bid alternate does not negate the contractor and lighting manufacturer's responsibility to comply fully with the requirements of these specifications. Any exceptions to the specifications must be clearly stated in the prior approval submittal documents.

B. Light Level Requirements: Manufacturer shall provide computer models guaranteeing light levels on the field over 25 years. If a constant light level cannot be provided, the specified maximum Recoverable Light Loss Factor and maintenance/group relamping schedule shall be provided in accordance with recommendations in the Pennsylvania State University report "Empirical Light Loss Factors for Sports Lighting", presented at the 2009 IESNA Annual Conference.

Lamp Replacement Interval (hours)	Recoverable Light Loss Factor (RLLF)
2100	0.69

For alternate systems, scans for both initial and maintained light levels are required.

Area of Lighting	Average Initial Light Levels	Average Target/Maintained Light Levels	Max to Min Uniformity Ratio	Grid Points	Grid Spacing
Football	72.46 footcandles	50 footcandles	2.0:1.0	72	30' x 30'
Soccer	72.46 footcandles	50 footcandles	2.0:1.0	84	30' x 30'
Track	46.37 footcandles	32 footcandles	9.8:1.0	42	30' x 30'
Walking Track	8.55 footcandles	5.9 footcandles	4.2:1.0	42	30' x 30'

C. Revised Electrical Distribution: Manufacturer shall provide revised electrical distribution plans to include changes to service entrance, panel, and wire sizing.

PART 2 – PRODUCT

2.01 LIGHTING SYSTEM CONSTRUCTION

A. System Description: Lighting system shall consist of the following:
1. Galvanized steel poles and crossarm assemblies
2. Pre-stressed concrete base embedded in concrete backfill allowed to cure for 24 hours before pole stress is applied. Alternate may be an anchor bolt foundation designed such that the steel pole and any exposed steel portion of the foundation is located a minimum of 18 inches above final grade. The concrete for anchor bolt foundations shall be allowed to cure for a minimum of 28 days before the pole stress is applied, unless shorter cure time is allowed by structural engineer of record.
3. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
4. All luminaires, visors, and crossarm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment.
5. Manufacturers will remote all ballasts and supporting electrical equipment in aluminum enclosures mounted on pole approximately 10' above grade. The enclosures shall be touch-safe, and include ballast, capacitor and fusing, with indicator lights on fuses to indicate when a fuse is to be replaced for each luminaire.

6. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
7. Control and Monitoring Cabinet (NEMA Type 4) to provide on-off control and monitoring of the lighting system, constructed of aluminum. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 amps, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

B. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast and other enclosures shall be factory assembled, aimed, wired and tested.

C. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the crossarms, pole, or electrical components enclosure.

D. Lightning Protection: Manufacturer shall provide integrated lightning grounding via concrete encased electrode grounding system as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.

If grounding is not integrated into the structure, the Manufacturer shall supply grounding electrodes, copper down conductors and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be not less than 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

E. Safety: All system components shall be UL Listed for the appropriate application.

F. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric power: 480 Volt, 3 Phase (to be confirmed)
2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

2.02 STRUCTURAL PARAMETERS

A. Wind Loads: Wind loads shall be based on the 2009 International Building Code. Wind loads to be calculated using ASCE 7-05, a design wind speed of 90, exposure category C.

B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2009 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-5).

C. Foundation Design: The foundation design shall be based on soils that meet or exceed those of a Class 5 material as defined by 2009 IBC Table 1806.2.

PART 3 – EXECUTION

3.01 SOIL QUALITY CONTROL

A. It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:

1. Providing engineered foundation embedment design by a registered engineer in the State of Massachusetts for soils other than specified soil conditions;
2. Additional materials required to achieve alternate foundation;
3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

3.02 FIELD QUALITY CONTROL

A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

B. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios, and maximum kilowatt consumptions are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be liable to any or all of the following:

1. Manufacturer shall at his expense provide and install any necessary additional luminaires to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind load.

3.03 TRAINING

A. Provide the services of a factory-authorized service representative to demonstrate the system and train Owner's maintenance personnel. Include a minimum of 4 hours of training.

END OF SECTION